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(56) Documents Cited

GB 2291237 A GB 2181582 A GB 2114791 A
EP 0056686 A2 WO 88/09541 A1

(58) Field of Search

UK CL (Edition O) G4H HTG

(54) Security data use

(57) A hand-held transmission device 10 has operating buttons 14 enabling a user to transmit personal security data within a memory of the device 10 to electronic equipment, such as a facsimile machine 16, adapted to use the data. The data stored in the device 10 can provide for secure transmission by the facsimile machine 16, the transmitted data being used to establish the secure link before the machine 16 transmits any facsimile. Where it is preferred to use security cards, the device 10 can be adapted to store such cards, display data from the cards, edit that data, transmit that data and receive updates to that data.

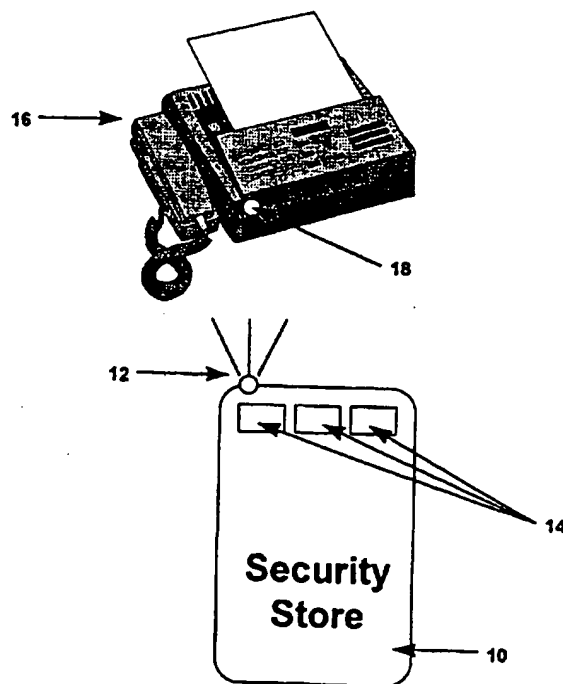


FIGURE 1

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995

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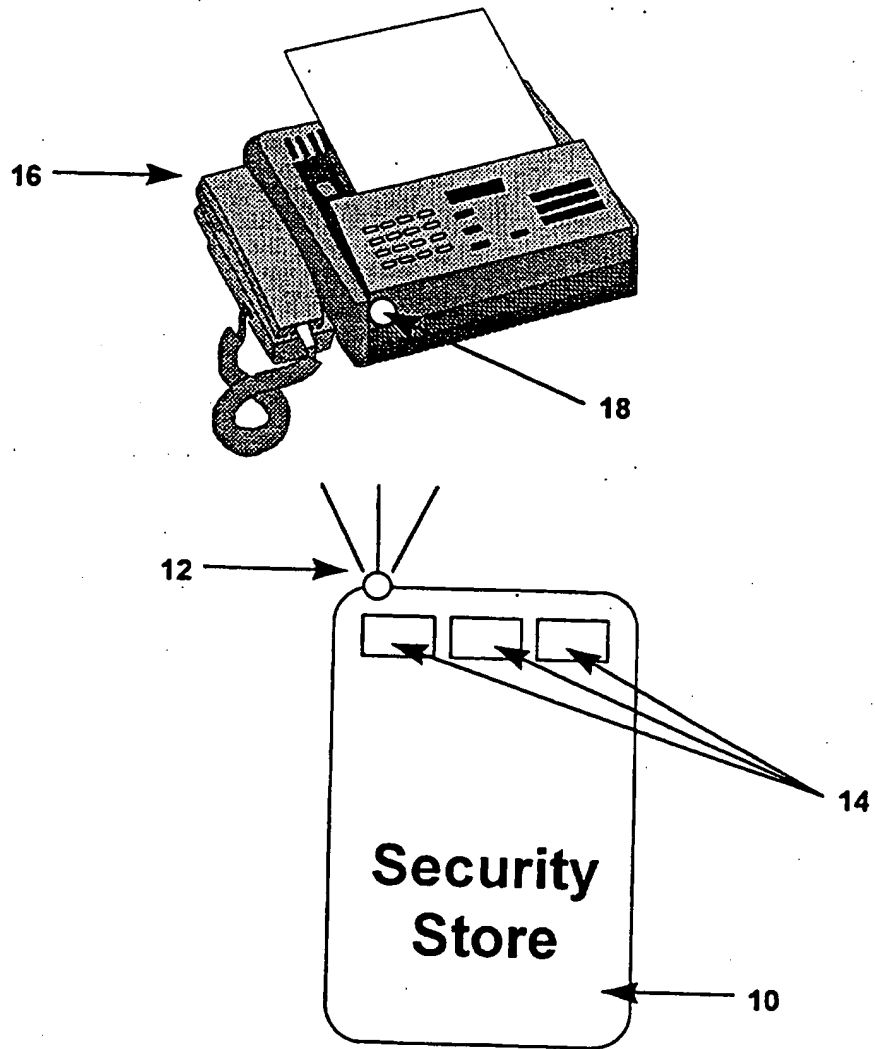


FIGURE 1

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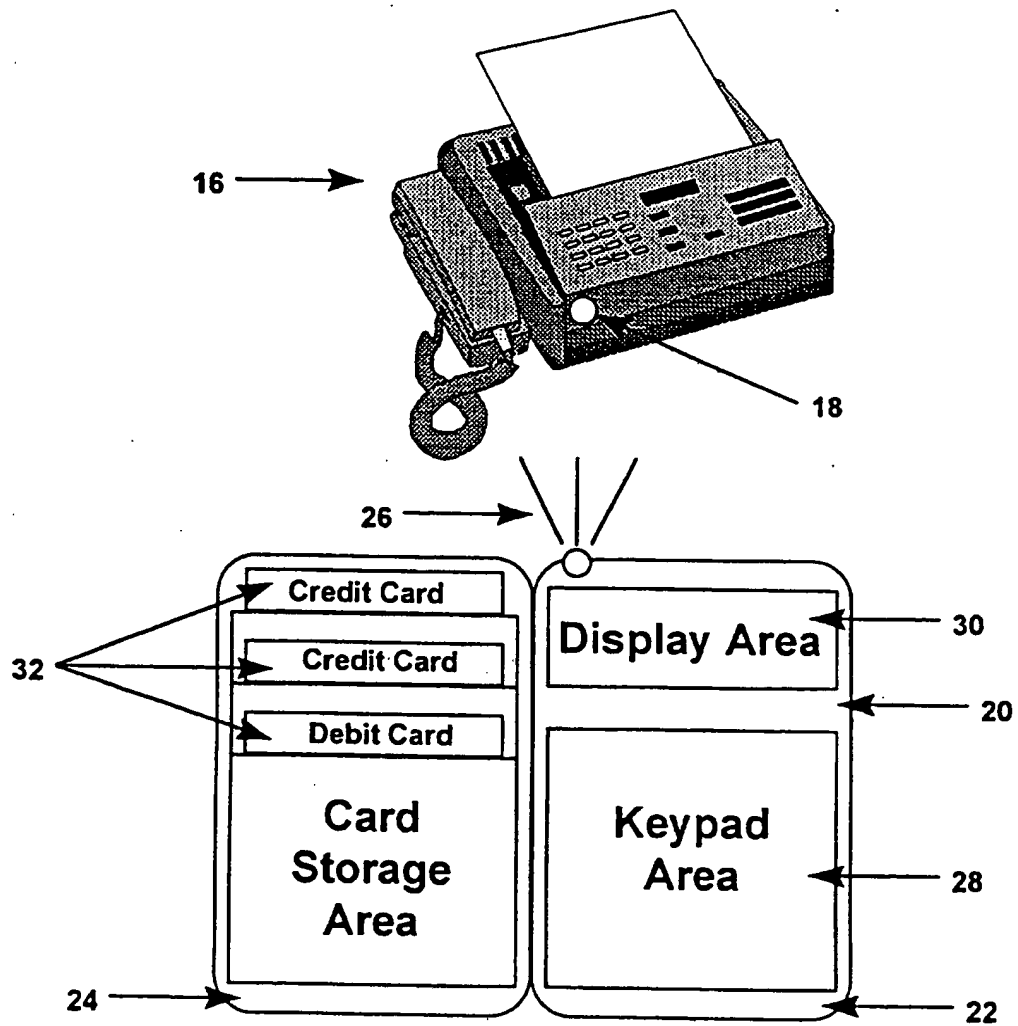


FIGURE 2

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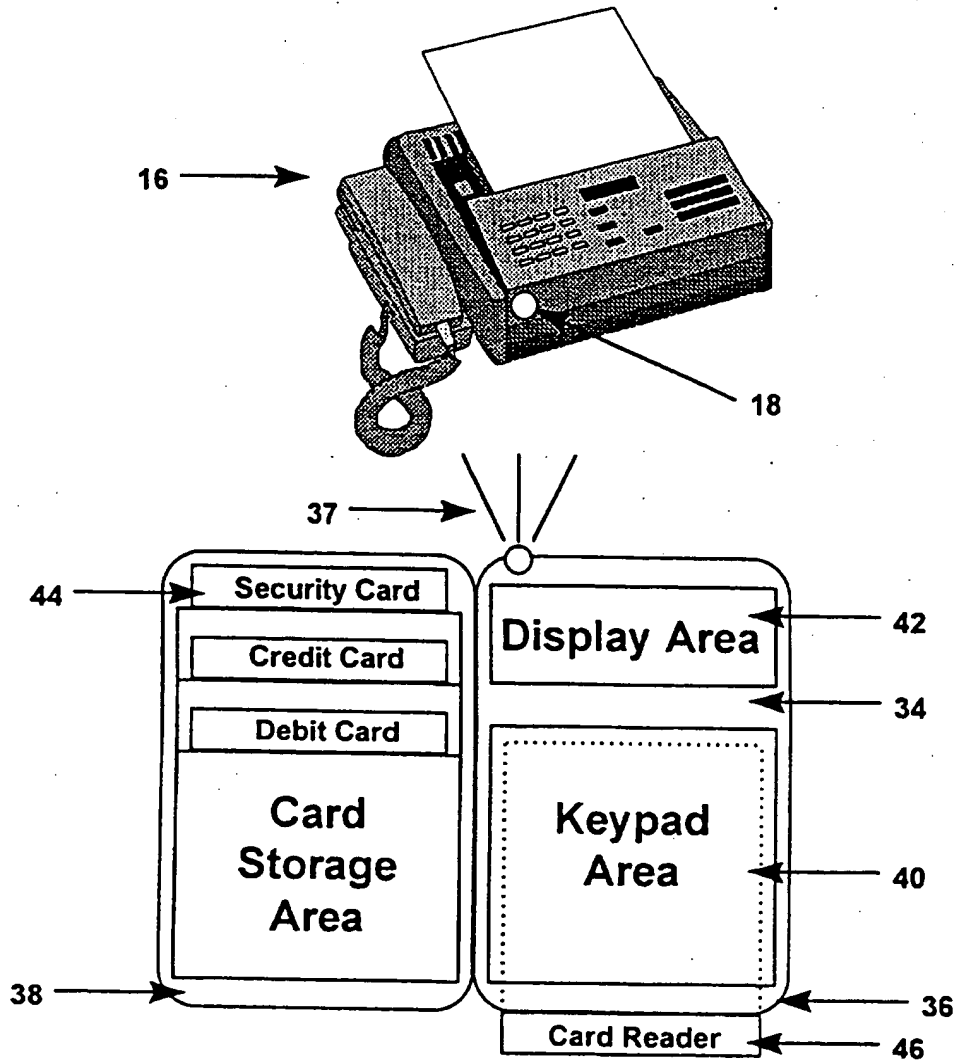


FIGURE 3

2309808**Security Data Use**

This invention relates generally to the secure transmission of data using electronic equipment, and particularly, but not exclusively, to methods and apparatus for storage of personal security data and transfer of such data to and from electronic equipment such as facsimile machines, computers, computer modems, computer printers, multi-functional devices and copiers.

In the modern office it is becoming increasingly necessary to provide security in many forms, including limiting access to the use of specific items of equipment, for example copiers and facsimile machines, and the secure transfer of data, in all forms, over telecommunications systems. One example of the latter would be the secure transmission of facsimile documents between one item of equipment and another, or between one individual and another.

According to the present invention there is provided security apparatus comprising means for storing personal security data and means for selective transmission of the stored data to communication equipment.

Preferably the apparatus was an electronic control, and the data storage means may be a non-volatile memory within the apparatus. Alternatively the data storage means may include a device containing memory and the apparatus has means for reading the stored data from the memory of the device. Examples of such devices include hand-held devices containing memory, Smart cards (credit card-size devices containing silicon memory or microprocessor and memory) and computer discs.

Preferably also the apparatus may have means for receiving data from the communication equipment and for storing the received data. The latter can be stored within the non-volatile memory. Alternatively the received data may be transferred by the apparatus to the security device.

Further, the apparatus may include means providing for the personal security data to be inspected therein, and/or edited, following the entry of a personal security code. Entry of the code to the apparatus may be by way of a key pad, and inspection of the personal security data may be by way of a display on a liquid crystal display of the apparatus.

The means for transmitting the stored data and/or receiving data preferably operates by way of wire-less technology, for example by way of infra-red or radio transmission. The transmission means may provide for secure and error-free transmission to the equipment requiring use of the data, and the means for receiving data may provide for the secure and error-free receipt and storage of the data from the equipment.

The present invention also provides a security method comprising storing personal security data in a security apparatus, and selectively transmitting the data from the apparatus to communication equipment.

Preferably the data is transmitted from the apparatus by way of wire-less technology, for example by way of infra-red or radio transmission, which may provide for secure and error-free transmission to the equipment requiring use of the data.

When data is stored in a device containing memory, the method may include selectively operating the apparatus to read the data stored on the device prior to transmitting the data to the communication equipment.

The method may also provide for operating the apparatus to receive data from the communication equipment and for storing the received data, or transferring the received data to the device, if provided. The method preferably provides for the secure and error-free receipt and storage of the data from the equipment.

Embodiments of the present invention will now be described by way of example only, with reference to the accompanying drawings, in which:-

Fig. 1 is a diagrammatic representation of one embodiment of the invention for use with equipment such as a facsimile machine;

Fig. 2 is a diagrammatic representation of a second embodiment of the invention for use with such a machine; and

Fig. 3 is a diagrammatic representation of a third embodiment of the invention for use with such a machine.

Referring to Fig. 1 of the drawings, a hand-held device 10, for example similar in size to a credit card or pocket calculator, is provided with an electronic control circuit in which is connected a wire-less transmitter 12, for example using infra-red transmission. The device 10 is also provided with manually operable buttons 14 defining switches connected with the control circuit whereby to enable a user to control the action of the device 10 and to provide the user with necessary feedback via visual and/or audio means (not shown).

Personal security data relating to the user is stored within a non-volatile memory of the device 10 and, by manual operation of the respective buttons 14, the data can be transmitted to electronic equipment adapted to use the data. As shown, a facsimile machine 16 is provided with an infra-red receiver 18 whereby to receive data transmitted from the device 10. The transmitted data is guaranteed to be error-free and complete by use of a protocol appropriate to the form of wire-less communications selected, for example, the IrLAP protocol specified by the Infra-red Data Association. All data transmitted, received or stored is encrypted using a cipher appropriate to the security system being used.

In a situation where the requirement is to limit access to the facsimile machine 16, the device 10 will contain personal identification information to be transmitted to the machine 16 prior to use. The device 10 may be adapted to receive data by means of infra-red transmission from the machine 16 so that a record of the use of the machine may be returned to the device 10.

When secure transmission by the facsimile machine 16 is required, the device 10 will have stored therein data relating to an individual or group,

as well as details of other individuals or groups with whom the user has established some form of secure communications. The data transmitted by the device 10 to the machine 16 is used to establish the secure link before the machine 16 transmits any facsimile. With the device 10 being adapted to receive data from the machine 16, when a new secure link is established, information relating to that link will be transferred from the machine 16 to the device 10 for storage.

In the embodiment of Fig. 2, a hand-held device 20 is formed of two hinged parts 22, 24, and is, for example, similar in size to a credit card wallet or pocket calculator wallet.

The part 22 is provided with an electronic control circuit in which is connected a wire-less transmitter 26, for example using infra-red transmission. A key pad 28 is provided with buttons (not shown) defining switches in the electronic control for entry of personal identity numbers and for editing data. A visual display, for example a liquid crystal display can be viewed at an area 30 on the part 22. The device 20 functions in the same manner as the device 10 of the Fig. 1 embodiment.

The part 24 of the device 20 has the form of a storage area for cards 32 such as Smart cards, credit cards etc.

In the embodiment of Fig. 3, a hand-held device 34 for use with the facsimile machine 16 is formed, similar to the Fig. 2 embodiment, of hinged parts 36, 38, and is, for example, similar in size to a credit card wallet or pocket calculator wallet. The device part 36 is provided with an electronic control circuit in which is connected a wire-less transmitter 37, for example using infra-red transmission and is provided with a key pad 40 and a display area 42.

In this embodiment, personal security data can also be stored on an additional device such as a security card 44, for example a Smart card. To transfer data between the card 44 and the control circuit of the device 34, the device part 36 is provided with a card reader 46, which can receive the

card 44 and is capable of reading and writing the contents of the latter for the storage of personal security data. The device 34 otherwise functions in the same manner as described in relation to the embodiments of Figs. 1 and 2.

The device part 38 provides for storage of the security card 44 as well as other cards such as credit cards.

To use the device, the security card 44 is removed from the card storage area of the device part 38 and is inserted into the card reader 46. The device 34 is then be orientated whereby the transmitter 37 points towards the facsimile machine 16, and a transmit button on the key pad 40 is pressed whereby to transmit the required data to the machine 16. The document can then placed in the machine 16, the destination number selected, and the machine started. The data from the device 34 in the machine 16 ensures that the fax is sent securely to the correct machine or person and confidentially using encryption. Once transmission is successful, the data is deleted from the memory of the machine 16.

The data stored within the device of any of the embodiments and/or within the security card of the Fig. 3 embodiment may be displayed and edited. Alternatively the data may be transmitted to an item of equipment where the data may be edited before being retransmitted to the device for storage therein or within the security card.

In a transmission of data between the hand-held device and the equipment, which transmission may be initiated by either, the first stage involves the exchange of technical and communications capabilities. The second stage involves the test transmission of data to ensure that communications will be reliable. The third stage involves the transmission of data from the sender to the receiver, and this may involve more than one transmission of data and may also involve one or more responses to that data from the receiver. The fourth stage involves a confirmation of receipt produced by the receiver to indicate that reception has been successful. This stage may involve more than one transmission of data with or without

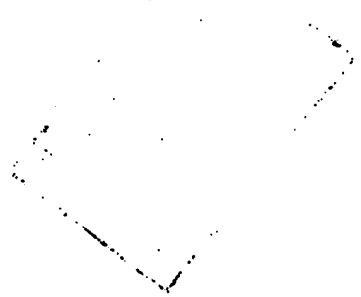
suitable responses. In some cases, any or all of the first, second and fourth stages may be omitted.

The data transferred may be in the form of one or more blocks, each of which may contain a header, the data itself and a trailer. If a header is present it may indicate the nature of the data and the overall length of the block. The data itself may be in encrypted format. The trailer may contain check data, for example a checksum or a cyclic redundancy check, to ensure the validity of the whole block.

There is therefore provided a very convenient way of providing for secure transmission of data by facsimile machines, computers and other equipment, using an easily retainable, portable transmission and receiving device which can be simply operated by the user to obtain access to the equipment and/or to ensure secure transmission of information by the equipment. Where it is preferred to use security cards such as Smart cards, there is provided a convenient way of storing such cards, of displaying data from the cards, editing that data, transmitting that data and receiving updates to that data.

Various modifications may be made without departing from the invention. For example, the configuration and layout of the devices may differ from those described and shown. Also it should be appreciated that any form of wire-less technology may be used, for example radio transmission.

Whilst endeavouring in the foregoing Specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.



Claims:-

1. Security apparatus comprising means for storing personal security data and means for selective transmission of the stored data to communication equipment.
2. Apparatus according to Claim 1, wherein the apparatus has an electronic control.
3. Apparatus according to Claim 2, wherein the data storage means is a non-volatile memory within the apparatus.
4. Apparatus according to Claim 2, wherein the data storage means includes a device containing memory and the apparatus has means for reading the stored data from the memory of the device.
5. Apparatus according to Claim 4, wherein the device is a hand-held device containing memory, a credit card-size device containing silicon memory or microprocessor and memory or a computer disc.
6. Apparatus according to any of the preceding Claims, wherein the apparatus has means for receiving data from the communication equipment and for storing the received data.
7. Apparatus according to Claim 6, when dependent on Claim 3, wherein the non-volatile memory is arranged to store the received data.
8. Apparatus according to Claim 6, when dependent on Claim 4, wherein the apparatus is arranged to transfer the received data to the security device.
9. Apparatus according to any of the preceding Claims, including means providing for the personal security data to be inspected therein, and/or edited, following the entry of a personal security code.

10. Apparatus according to Claim 9, wherein a key pad provides for entry of the code.
11. Apparatus according to Claim 9 or 10, wherein a liquid crystal display provides for inspection of the personal security data.
12. Apparatus according to any of the preceding Claims, wherein means for transmitting the stored data and/or receiving data preferably operates by way of wire-less technology.
13. Apparatus according to Claim 12, wherein the transmission means operates by way of infra-red or radio transmission.
14. Apparatus according to any of the preceding Claims, wherein the transmission means provides for secure and error-free transmission to the equipment requiring use of the data, and the means for receiving data provides for the secure and error-free receipt and storage of the data from the equipment.
15. A security method comprising storing personal security data in a security apparatus, and selectively transmitting the data from the apparatus to communication equipment.
16. A method according to Claim 15, wherein the data is transmitted from the apparatus by way of wire-less technology.
17. A method according to Claim 16, wherein transmission is by way of infra-red or radio transmission.
18. A method according to any of Claims 15 to 17, wherein, when data is stored in a device containing memory, the method may include selectively operating the apparatus to read the data stored on the device prior to transmitting the data to the communication equipment.

19. A method according to Claim 18, including receiving data from the communication equipment and transferring the received data to the device.

20. A method according to any of Claims 15 to 17 including receiving data from the communication equipment and storing the received data.

21. Security apparatus substantially as hereinbefore described with reference to the accompanying drawings.

22. A security method substantially as hereinbefore described with reference to the accompanying drawings.

23. Whilst endeavouring in the foregoing Specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.



Application No: GB 9602441.9
Claims searched: 1-22

Examiner: Mike Davis
Date of search: 1 May 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): G4H (HTG)

Int Cl (Ed.6):

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2291237 A (ASHLEY)	1-22
X	GB 2181582 A (BLACKWELL)	1-22
X	GB 2114791 A (GRYNBERG)	1-22
X	EP 0056686 A2 (HONEYWELL)	1-22
X	WO 88/09541 A1 (COGEMA)	1-22

The documents cited are only examples of a large number relevant to the claims. Further searching may be necessary later if this application is proceeded with.

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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